

BIODIESEL IN THE NATIONAL PARKS



Manassas National Battlefield Park **Manassas, Virginia**

Annual Fuel Order 3,000 Gallons B20
Will begin operation in spring of 2003.



BIODIESEL IN THE NATIONAL PARKS



Mount Rainier National Park Ashford, Washington

For the past two years has operated all 43 park diesel vehicles, equipment and generators on B20. Annual utilization of 35,000 gallons of B20. The park also leads the service in use of re-refined motor oils and green lubricants.

The fuel powers snow removal equipment at elevations ranging from 2500 ft to 5600 feet.



BIODIESEL IN THE NATIONAL PARKS



National Capitol Parks East Washington D.C.

Annual Fuel Order 74,000 Gallons B20, 18,000 Gallons B5

Operating a fleet of 83 vehicles and equipment on B20

Heating three buildings on B5



BIODIESEL IN THE NATIONAL PARKS



Pictured Rocks National Seashore Munising, Michigan, Lake Superior

In addition to leading park areas in the utilization of soy based lubricants, the park operates eleven vehicles and pieces of equipment on B20.



BIODIESEL IN THE NATIONAL PARKS



Redwoods National Park

Del Norte and Humboldt Counties, California

The parks 20 pieces of construction, mowing and maintenance equipment run on B-80. Once additional fuels or funding become available the park will begin operating road vehicles on biodiesel blends.



BIODIESEL IN THE NATIONAL PARKS



Rock Creek Park Washington D.C.

Annual Fuel Order 18,000 Gallons B20

All park diesel operations on B20. Fleet of 37, includes Trucks, mowers and construction equipment.



BIODIESEL IN THE NATIONAL PARKS



Scotts Bluff National Monument Gering, Nebraska

Operates a 15 passenger Ford E350 van on B20 as a shuttle bus within the park. The van provides visitors with information on biodiesel and is marked with biodiesel emblems.



BIODIESEL IN THE NATIONAL PARKS



Sleeping Bear Dunes National Seashore

Empire, Michigan, Lake Michigan

All 14 of the diesel powered vehicles and equipment in the park operate on B20.



BIODIESEL IN THE NATIONAL PARKS



Voyageurs National Park International Falls, Minnesota

Operates two dump trucks, two pickups and a barge on B20.



BIODIESEL IN THE NATIONAL PARKS



Yellowstone National Park Idaho, Montana, Wyoming



This picture says it all...

BIODIESEL IN THE NATIONAL PARKS



Yellowstone National Park Idaho, Montana, Wyoming

Began with the "Truck in the Park Program in 1995. In the fall of 2002 converted all park operations to B20 with a purchase of 19,000 gallons of B100 for onsite blending. Last week Jim determined that another order is due soon and he anticipates the park B100 purchases will average 50,000 gallons per year.

Currently operating a fleet of 203 vehicles and equipment and two boats on B20. Additionally some testing is being performed on building heat functions with B5. The park concession operations is considering a springtime switch to B20.



BIODIESEL IN THE NATIONAL PARKS



Yellowstone National Park Idaho, Montana, Wyoming

The experience of operating biodiesel in the extreme weather conditions found at Yellowstone have proven to be valuable in convincing others on the fuels viability. Only once did the truck fail to start, @ 37 degrees below zero, but none of the petroleum diesel vehicles were able to start either. The vehicle was operated on B100, rapeseed ethyl ester.

At 100,000 miles, the engine was torn down and no unusual wear was detected. Once the truck reaches the 200,000 mile mark it is planned to place the vehicle in the Yellowstone Historical Vehicle Museum.



BIODIESEL IN THE NATIONAL PARKS



Yosemite National Park El Portal, California



BIODIESEL IN THE NATIONAL PARKS



Yosemite National Park El Portel, California

At the El Portel maintenance complex only B20 has been pumped since the spring of 2002. At this base of operations over 87 pieces of equipment and vehicles are serviced and fueled. The complex is a sustainable showcase with solar generation on the roof, utilization of green lubricants and major recycling operations have been undertaken.

The next step is to bring B20 to the rest of the park.

BIODIESEL IN THE NATIONAL PARKS



Yosemite National Park El Portel, California

Standby Generation



Heavy Trucks

BIODIESEL IN THE NATIONAL PARKS



Yosemite National Park El Portel, California

Garbage Trucks



Motor Grader

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Yosemite National Park El Portel, California

Heavy Duty Transport



Road Equipment

BIODIESEL IN THE NATIONAL PARKS



Yosemite National Park El Portel, California



Snow Removal Equipment

BIODIESEL USE @ The



Bureau Of Land Management

Contact Information- Tom Jatko 303-236-9456

The BLM is just beginning to use biodiesel and biodiesel blends. In FY 2003 they used 2,000 gallons of B-100. Operations are using both B100 and blends in different applications. Current plans are to increase use of biodiesel blends, including supplying the fuel for fire fighting operations.



BIODIESEL USE @ The



U.S. Fish & Wildlife Service

Conserving the Nature of America

US Fish and Wildlife Service

Contact Information- Billy Umsted 303 984-6865

The Charles M. Russell Refuge in Montana has been using B20 for all operations since the fall of 2002. Current utilization is projected to average 35,000 gallons per year. The fuel is used in vehicles and heavy equipment.

Patuxent National Wildlife Refuge in Maryland has been working with the Maryland Soy Council to implement utilization of biodiesel blends for building heat and equipment and vehicle fuel.

Seven other refuges and offices are planning the utilizing biodiesel for fleet and equipment operations.



Obstacles to Overcome-

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- ⌘ \$\$\$
- ⌘ General Service Administration and their B20 ruling.
- ⌘ Rangers and their need for boat speed.
- ⌘ Rangers who require a SUV and Law Enforcement Vehicles.
- ⌘ Park managers who must drive a SUV.
- ⌘ In park cooperators/ fuel users.
- ⌘ NOx
- ⌘ Fuel Availability.
- ⌘ Cold Flow Jitters

Obstacles for Industry to Overcome-



- ⌘ Feedstock Availability.
- ⌘ Feedstock Oil Competition.
- ⌘ Local Fuel Production.
- ⌘ Unequal Tax or Production Supports.
- ⌘ State Air Quality Concerns.
- ⌘ Engine Warranty Issues.
- ⌘ NOx Concerns.
- ⌘ Fuel Distribution and Availability.
- ⌘ Diesel Vehicle Availability/Options

Green Energy Achievements @ Channel Islands National Park.

- ⌘ Over 28,000 gallons of diesel fuel use for energy generation on the islands has been eliminated or precluded through the utilization of renewable energy systems.
- ⌘ Annual Emission Savings =
 - ⌘ 333 Tons of Carbon Dioxide.
 - **16,000 Pounds of Nitrous-Oxides.****
 - 616 Pounds of Total Suspended Particulates (TSP)
 - 1372 Pounds of Hydrocarbons.
 - 800 Pounds of Sulfur Dioxides.
 - 2,300 Pounds of Carbon Monoxide.
 - And don't forget the motor oil use and generation of hazardous waste.



Santa Barbara APCD Emission Calculations

- ⌘ APCD calculations of emissions for a diesel generator. 70 hp engine/40kW generator. The figures are for every 1,000 gallons of petroleum diesel fuel consumed. If you are running a different sized generator base your calculations on fuel consumed and you will come very close as factors such as load and ambient temperature will juggle the figures some.

- ⌘ Annual Emission per 1,000 gallons=

- ⌘ 11.9 Tons of Carbon Dioxide.
575 Pounds of Nitrous-Oxides.
22 Pounds of Total Suspended Particulates (TSP)
49 Pounds of Hydrocarbons.
28.5 Pounds of Sulfur Dioxides.
812 Pounds of Carbon Monoxide.
And don't forget the use and generation of motor/hazardous waste oils.



NOx Problems- NOx Questions



- ⌘ Potential increase 2-4% yellow grease, 12-14% soy.
- ⌘ Per 1000 gallons of petroleum fuel burned- 575 lbs NOx released.
- ⌘ Increase per 1000 gal B100 @ 4% = 23 lbs = 598 lbs.
- ⌘ Increase per 1000 gal B100 @ 14% = 80 lbs = 655 lbs.
- ⌘ Solar use and Conservation have saved the park from burning 28,000 gallons of petroleum diesel per year. This equates to eliminating 16,100 pounds of NOx. Annually we could displace petroleum NOx and use 1,400,000 gallons of 2% increase yellow grease biodiesel on the NOx savings @ Channel Islands National Park alone.
- ⌘ In 2001 14% of the US annual biodiesel production of 20 million gallons would have been covered by the parks NOx savings if all biodiesel had been yellow grease.

NOx Problems-

NOx Answers

For All Of You-

Fuel Conservation and Conversion is the Answer.

For every 1,000 gallons of diesel fuel conserved you can use 50,000 gallons of 2% NOx yellow grease B100 biodiesel or 250,000 gallons of B20 with no increase in overall NOx emissions. In my calculations, with conservation, there is not a NOx issue.

Biodiesel Problems/Answers

- ⌘ It is your challenge and responsibility as consumers to promote and develop the production of biodiesel from locally available feedstocks.
- ⌘ Locally produced biofuels provide employment, political backing and consumer confidence in the fuel. While avoiding transportation cost, embedded energy increases and issues related to the disposal of locally generated waste oils.

"We don't have local crops for the job, but we can always harvest from the Old Faithful Inn."

Benefits from Pioneering

- ⌘ Prior to the Green Energy Parks Program at Channel Islands National Park, biodiesel was not available in Ventura County.
- ⌘ With the implementation of the biodiesel program at the park, the demand in the county generated interest in the commercial arena.

“If you build it...

Benefits from Pioneering

In March of 2002 the Ventura Harbor Marine Fuel facility opened. The new facility is equipped with a 20,000 gallon fuel tank and pumps B100 to the NPS vessels and also provides biodiesel to the public and other agencies.

In April a biodiesel workshop was held in Santa Barbara.

On July 9th the first B20 public fuel pump in southern California opened in Santa Barbara. Later a B20 pump came on line in Ventura.



In Ventura county interest in bioenergy is resulting in plans for local biodiesel production, development of bio tech training at the community college level and the establishment of a bioenergy working group.

...they will come"

Benefits from Pioneering

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The use of biodiesel in Yellowstone National Park has led to a regional biodiesel initiative bringing biodiesel to three adjacent National Forests, the Park Concessionaire and has led to the opening of the first public biodiesel pump in West Yellowstone. This spring biodiesel will be sold within the park at the public stations which are currently closed for the winter season.

Keys to Success in Environmental Leadership

Eternally



**UNDER
CONSTRUCTION**

Having Management Support for Sustainability is Critical for Success.

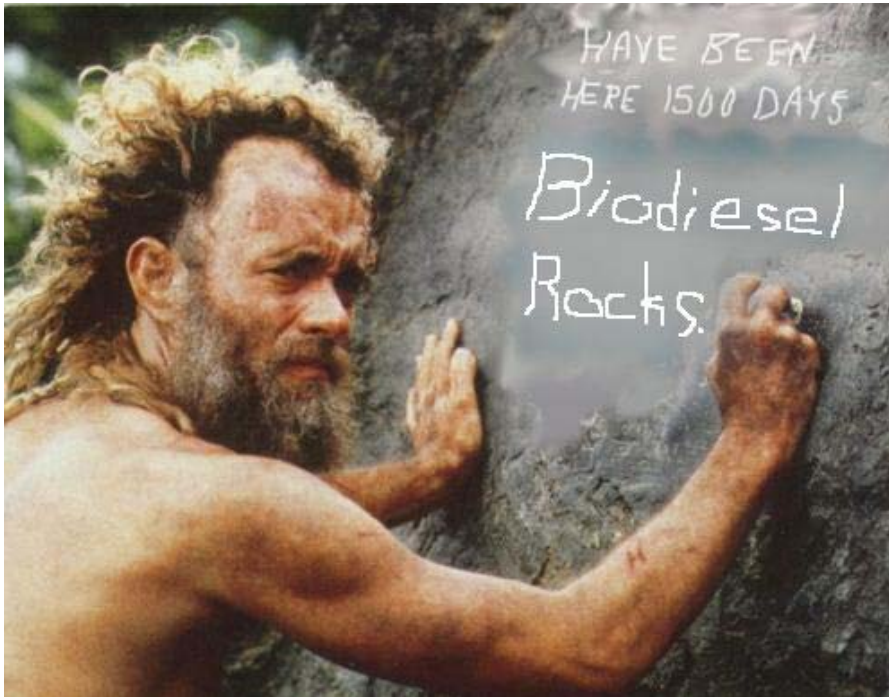


Gail Norton- Secretary of the Interior
Jim Evanoff- Yellowstone National Park

Lynn Scarlet-
Assistant Secretary of the Interior



Although a champion can initiate programs.....



As they develop the vision and test the waters.

Than bring others into the fold and enlighten them.



...while seeking and securing funding which makes partnerships invaluable...



- ⌘ Local partnerships benefit your community.
- ⌘ State Energy Offices are great resources.
- ⌘ Use bureau programs such as the “Green Energy Parks Program” to the full extent possible.
- ⌘ Grant opportunities exist in many venues.
- ⌘ Be innovative in expanding your horizons.
- ⌘ Combine Departmental objectives of environmental leadership, education and resource stewardship for program success.



**.... as all the staff works together
as a team to make programs function.**



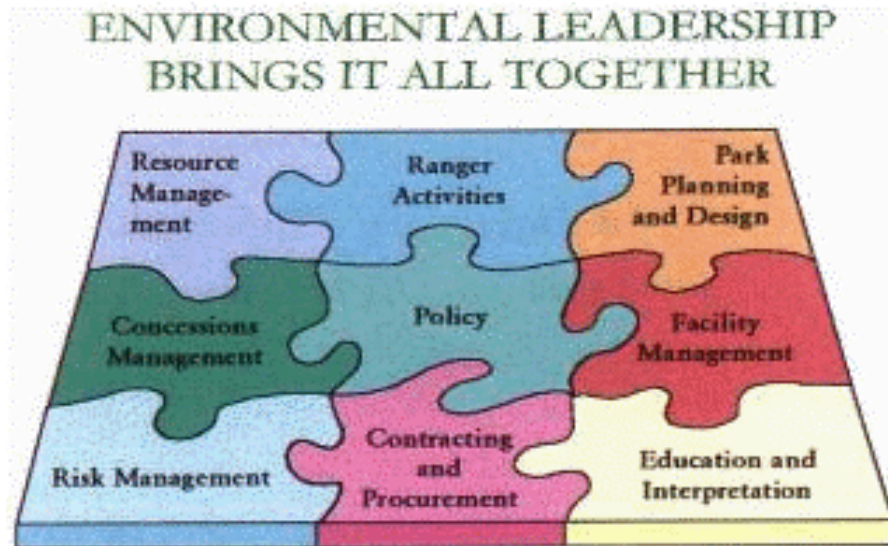
⌘ Operational Staff utilize and benefit from Environmental Leadership.

⌘ Contracting Officers get your materials.



Don't Let The Negative Folks Get You Down.





⌘ **N.P.S. Green Energy and Environmental Leadership Website @**

⌘ <http://www.nps.gov/renew>

⌘ **Made with 100% Recycled Electronics-**



SAVE MOTHER EARTH !

A thick, horizontal yellow brushstroke underline that spans the width of the slide, positioned directly beneath the main title.

Did you participate in your Hotels “Green” Hotel Program?

- ⌘ Request to Not have your sheets washed each day.
- ⌘ Hang up your towel and use it the next day.
- ⌘ Don’t use those stupid little shampoo bottles.
- ⌘ Turn off/down the AC or heat when you leave.
- ⌘ Don’t waste electricity.

More information @ <http://www.greenhotels.com>

You must lead by example.



Questions ?

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Channel Islands National Park

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- ⌘ National Park Service @
<http://www.nps.gov/chis/homepage>
- ⌘ Green Parks @ <http://www.nps.gov/renew>
- ⌘ This Presentation @
<http://www.nps.gov/renew/biodiesel-cc.ppt>
- ⌘ NPS Biodiesel Spreadsheet @
<http://www.nps.gov/renew/NPSBiodiesel.xls>